



Shape Your Business For the Future:

# Powering Transformation With Cisco

## Mobility: Innovations to Support BYOD

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Specialist, SEA Region  
12 June 2012**

# Agenda

Drivers

Assumptions

Key Functionality

Portfolio

Innovations

Why Cisco

# What is BYOD / Mobility?



ANY USER



ANYWHERE



ANYTIME



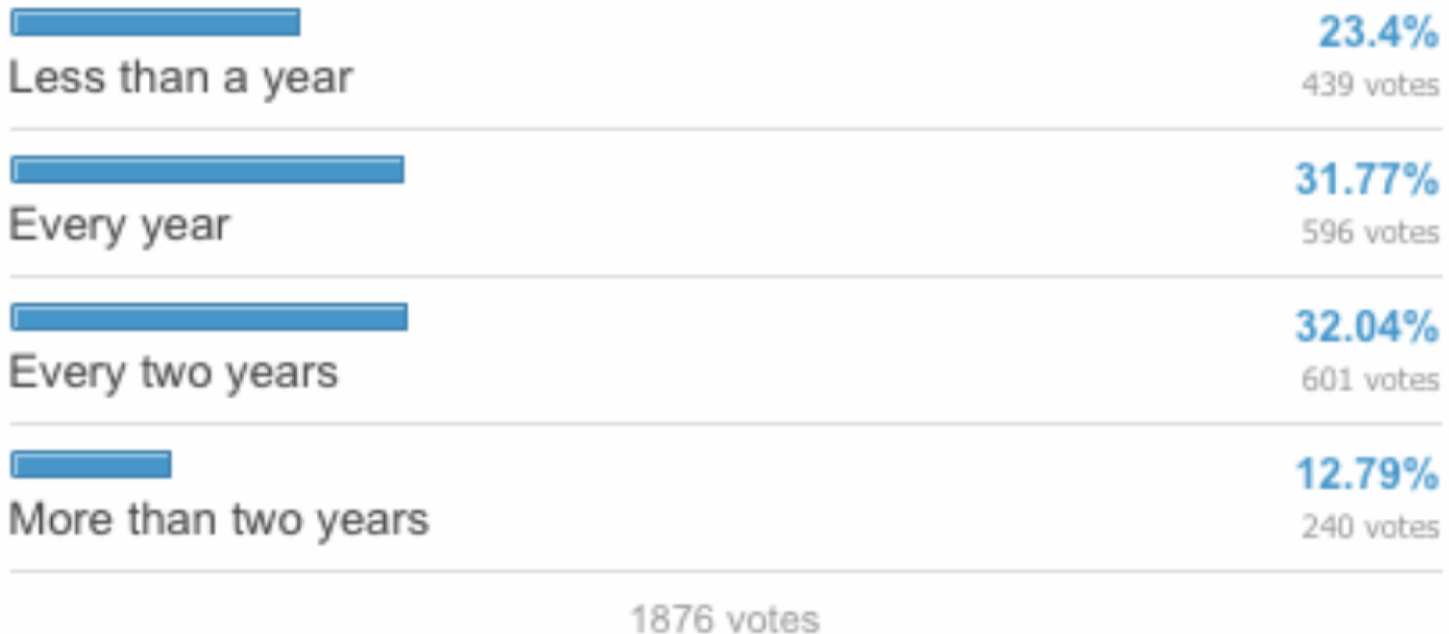
ANY DEVICE



# Workplace Trends

PhoneArena.com

## How often do you change your phone?



# BYOD / Mobility

## Drivers and Assumptions



## Drivers

- Majority of new network devices have no wired port
- Users will change devices more frequently than in the past
- Mobile devices have become an extension of our personality
- Guest access with accountability has become a mandatory business need

## Assumptions

- Guests must be isolated and their activity accounted for
- Users will have 1 wired and 2 or more wireless devices moving forward
- The wireless network must be secure and as predictable as the wired network
- There can be no unmanaged devices any more – only managed and semi-managed

# BYOD / Mobility

## Use Cases

### Basic Mobility

- Guest Wi-Fi
- Corporate Wi-Fi
- Mobile Mail only

### Basic BYOD

- Guest Wi-Fi
- Corporate Wi-Fi
- Personnel Mobile Device with Profiling

### Advanced BYOD

- Guest Wi-Fi
- Corporate Wi-Fi
- Personnel Mobile Device with Profiling and Provisioning
- VPN Access
- Wired BYOD
- MDM / VDI
- Voice / Video Everywhere
- RTLS/Location

# BYOD / Mobility

## Key Functionality and Success

### Key Functionality

- Unified wired and wireless network with centralized policy management
- Sponsored guest and contractor access management that is isolated and accountable
- “AAA” (Authentication, Authorization, and Accounting) to determine “who” accesses your network
- “PP” (Profiling and Provisioning) to simplify onboarding of personal devices and enforce the “what, where, when, and how” users access your network

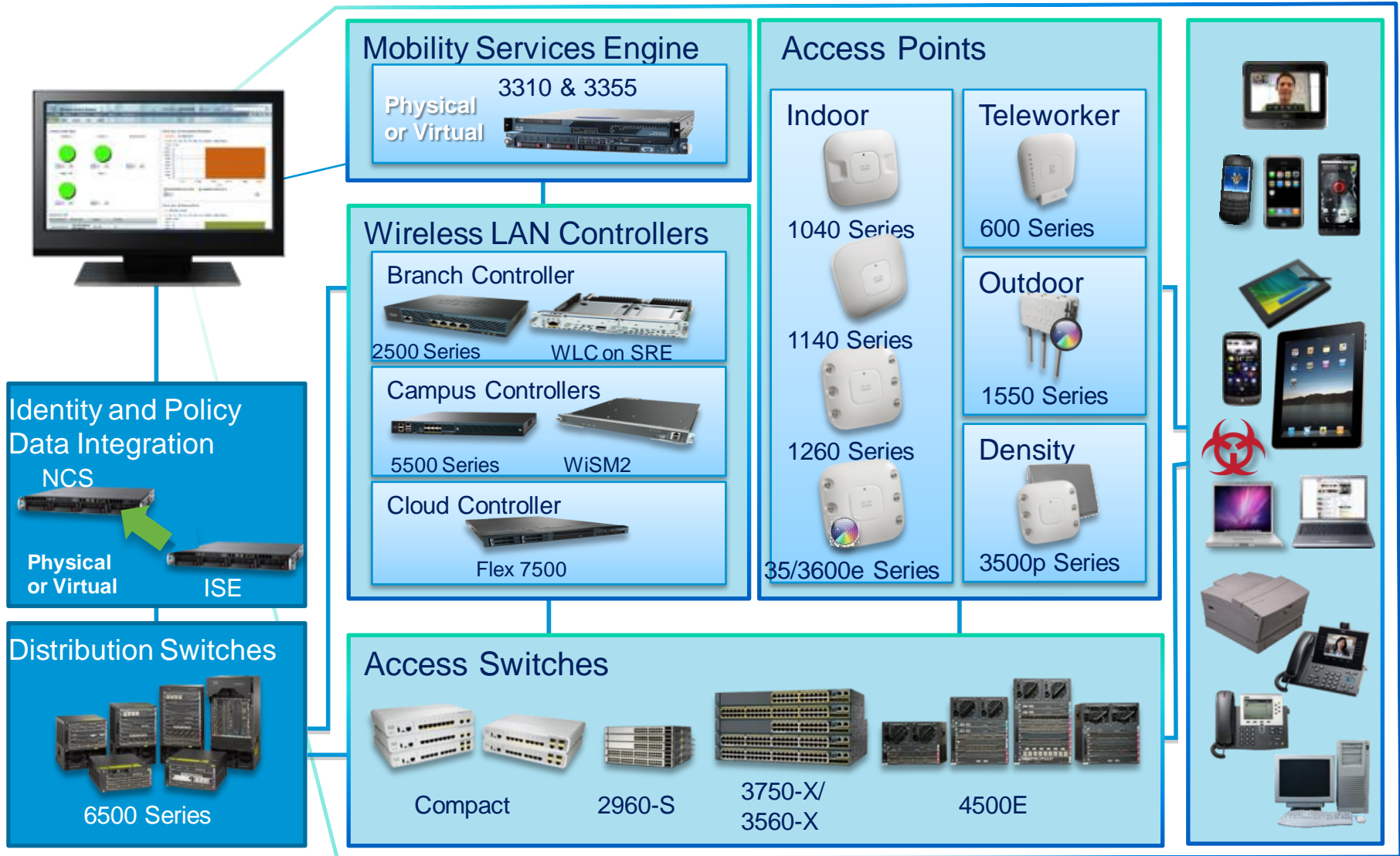
### What is success?

- A well designed Mobility / Unified Access Network provides:
- **CONTROL** (ISE) and **VISIBILITY** (Prime) for IT
- **DEVICE CHOICE** and **PREDICTABILITY** (CleanAir, ClientLink, VideoStream) for Users
- **BALANCE** between the number of wired ports (1:1 ratio) and wireless radios (25:1 ratio)



# Cisco's BYOD / Mobility Portfolio

Control and Visibility for IT / Device Choice and Predictability for Users



# Miercom Lab's Testing Summary of 3600 Series Access Point

## Key findings and conclusions:

- **Battery usage for wireless only devices such as tablets show 38% improvement with Cisco AP 3600i/e**
- **Cisco AP 3600i/e supports 3x as many clients as Aruba AP-134 and AP-135 with mixed traffic**
- **True implementation of Bring Your Own Device (BYOD) with high air time efficiency**
- **4x4 MIMO allows for beam forming with any client, exhibiting average gains of 67%**
- **AP 3600i/e maintains high throughput at great distances, containing varying interference**

<http://www.miercom.com/2012/03/cisco-ap3600ei-earns-miercom-performance-verified/>

# Cisco Aironet 802.11n + 802.11ac Access Point Portfolio

Teleworker

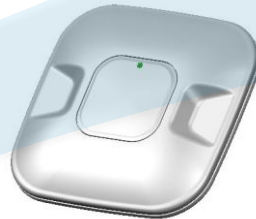
Business-Ready

Mission Critical

Best in Class  
Mission Critical



OfficeExtend  
AP 600



AP 1040



AP 3500  
AP 1260  
AP 1140



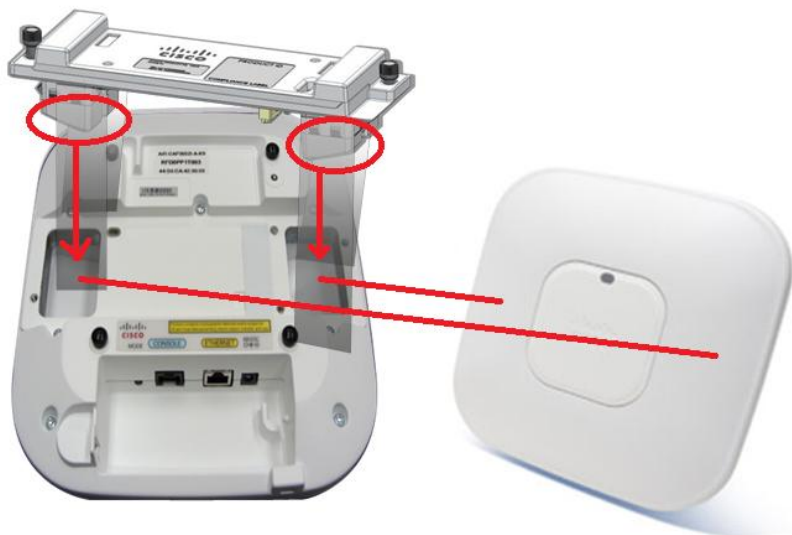
AP 3600  
and  
802.11ac  
Module

 With CleanAir  
technology

802.11n + 802.11ac WiFi

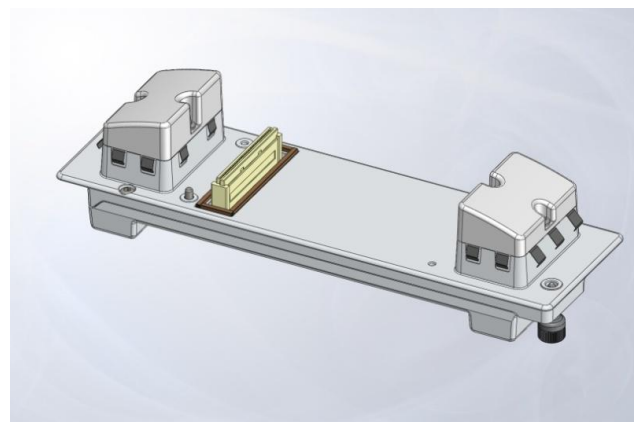
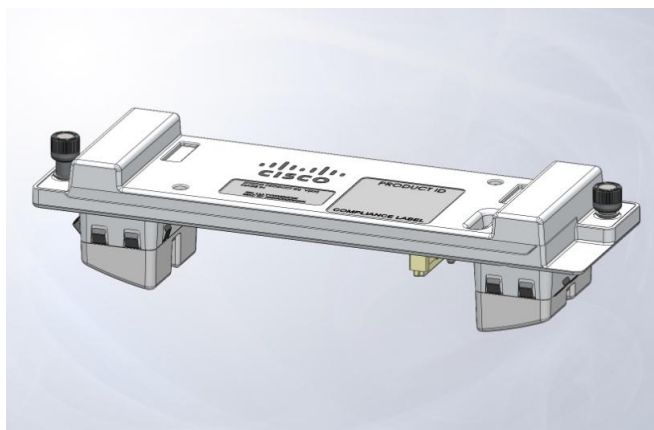
# AP3600 – Investment Protection 802.11ac Wave 1 Module

Target FCS  
Q1 CY13



802.11ac module antennas fully integrate into the AP for aesthetics and excellent RF performance

Leverages same modular architecture as the Security Monitor Module



# AP3600 – Investment Protection 802.11ac Wave 1 Module

Target FCS  
Q1 CY13

- A field-upgradable 802.11ac module add-on to the AP3600
- 802.11ac Wave 1 – 5 GHz AP3600 Module
  - 5 GHz radio module
  - Supporting 802.11a and n clients along with ac clients
  - 1.3 Gbps PHY / ~1 Gbps MAC (throughput)
  - 3 Spatial Streams, 80 MHz, 256 QAM
  - Explicit Beamforming support as per the 802.11ac standard
- AP3600 maintains dual-band support 2.4 and 5 GHz
  - Supporting b/g/n on 2.4 GHz and a/ac/n on 5 GHz
- Power requirement with the 802.11ac Module installed
  - Power draw with 802.11ac Module exceeds 15.4 Watts (802.3af), and will require either:
    - Enhanced PoE, 802.3at PoE+, Local Supply or Power Injector 4
- Universal Mounting Brackets (Bracket-2) required, or Ceiling Mounting Brackets (Bracket-3)



# 802.11ac: Extend the 11n User Experience

- 802.11ac clients are expected to start appearing in the holiday period end of CY2012, delivering 1x1 and potentially 2x2 .11ac capability
  - Details based on conversations w/ handheld chip manufacturer, Broadcom; market share leader as a supplier of chipsets in Smartphones/tablets
  - 3x3 802.11ac clients are not expected until later in CY 2013 if not into CY2014
  - However we fully expect BYOD to introduce 1x1 and 2x2 .11ac clients to Enterprise networks
- Tablets and Smartphones – continue to get a boost
  - faster connectivity = shorter active radio time = better battery life

Number of SS	802.11ac 80 MHz with 64 QAM	802.11n 20 MHz with 64 QAM
1	290 Mbps	65 Mbps
2	650 Mbps	144 Mbps



# Cisco's BYOD / Mobility Innovations

# Cisco's Unified Policy Management / Guest Access

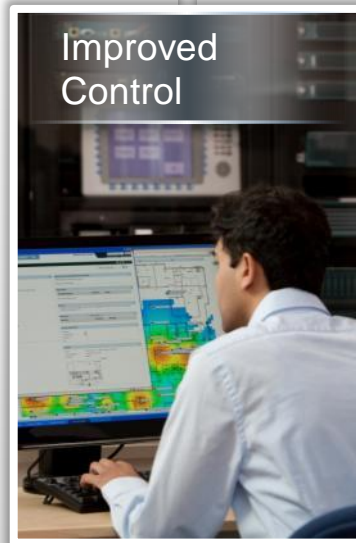
Industry's first context-based Wired+Wireless+VPN policy/guest management

BEFORE  
Separate policy and guest management

AFTER  
Unified context-based policy management  
for employees and guests across the network



Wired | VPN | Wireless



AAA + PP = Secure BYOD  
Simple | Unified | Automated

## Cisco ISE – Provides Unparalleled Control

# Cisco's Unified Network Management

Troubleshoot BYOD Wireless and Wired devices

USE CASE: User calls in to help center because they cannot get access to financial data on the network. IT determines if they are authorized to access this area.

1. Search on user name
2. Identify wired and wireless devices associated with the user
3. Display associated and disassociated devices
4. Use automated client troubleshooting workflow to resolve the issue
5. Issue resolved

Cisco Prime Network Control System (NCS)

The screenshot shows the Cisco Prime Network Control System (NCS) interface. The main content area is titled "Clients and Users" and displays "Clients Search Results - Reset". Below the title is a toolbar with icons for Troubleshoot, Test, Disable, Remove, More, Track Clients, and Identify Unknown Users. A table lists the search results:

IP Address	MAC Address	User Name	Type	Vendor	Device Name	Location	VLAN	Status	Interface
192.168.217.88	7e:16:7a:6c:1f00	EndUser1	Wireless	Cisco	sjc14-wl-wlc3	Cisco San Jose - Site 5	251	Associated	voice
192.168.42.13	d0:d1:0d:06:67:a4	EndUser1	Wired	Unknown	sjc14-wl-wlc3	Cisco San Jose - Site 5	260	Associated	corp1
192.168.241.214	2b:1c:02:48:59:5e	EndUser1	Wired	Apple	sjc14-wl-wlc3	Cisco San Jose - Site 5	260	Associated	corp1

Cisco Prime NCS = Provides Unparalleled **Visibility**

# Cisco's CleanAir Technology

Industry's first chip level proactive and automatic interference protection

BEFORE

Wireless interference decreases reliability and performance



AIR QUALITY



PERFORMANCE

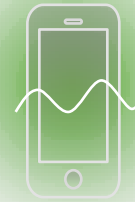


AFTER

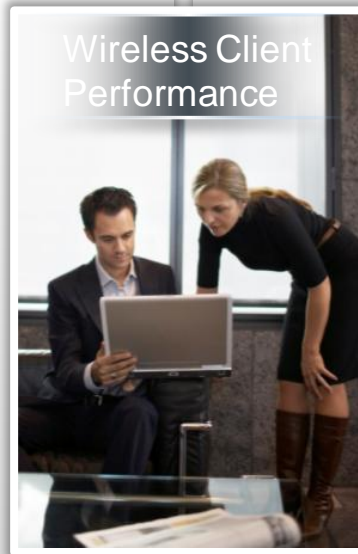
CleanAir mitigates RF interference improving reliability and performance



AIR QUALITY



PERFORMANCE



## Cisco CleanAir – Improves Performance and Predictability

# Why is Cisco's CleanAir Technology so Unique?

High resolution interference detection, classification, and mitigation at chip level

**BEST OF  
INTEROP**  
InformationWeek  
analytics



- CleanAir Radio ASIC
- Detect Wi-Fi and non-Wi-Fi interference sources
- Assess impact to Wi-Fi performance
- Proactively change channels when interference occurs
- Monitor air quality

Detect | Classify | Locate | Mitigate

# Cisco's ClientLink / ClientLink 2.0 Technology

Advanced beam forming technology improves wireless client performance

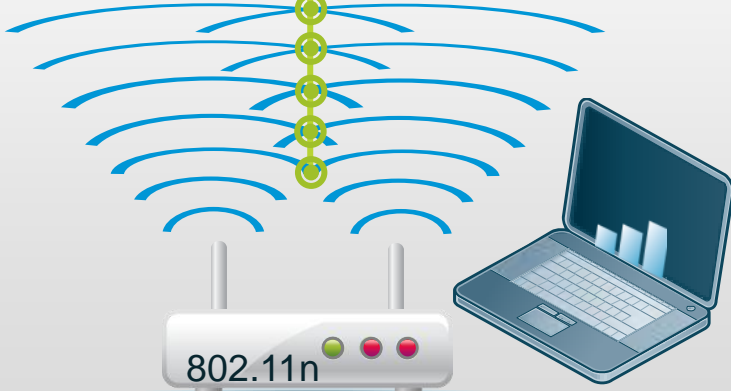
BEFORE

Beam not directed towards clients resulting in inconsistent performance

802.11a/g (ClientLink) or  
802.11a/g/n (ClientLink 2.0)



Beam Strength



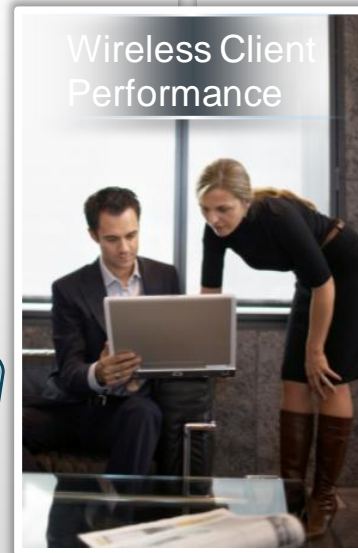
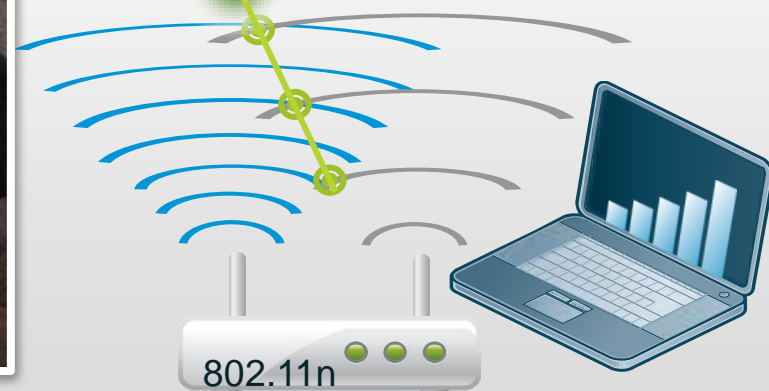
AFTER

Beam directed towards client resulting in consistent experience and better performance

802.11a/g (ClientLink) or  
802.11a/g/n (ClientLink 2.0)



Beam Forming



## Cisco ClientLink - Improves Predictability and Performance

# Cisco BandSelect Technology

Automatic band steering and selection for 5GHz capable devices

BEFORE

All clients crowd the 2.4GHz spectrum lowering performance

AFTER

5GHz capable clients are automatically moved to cleaner 5GHz spectrum



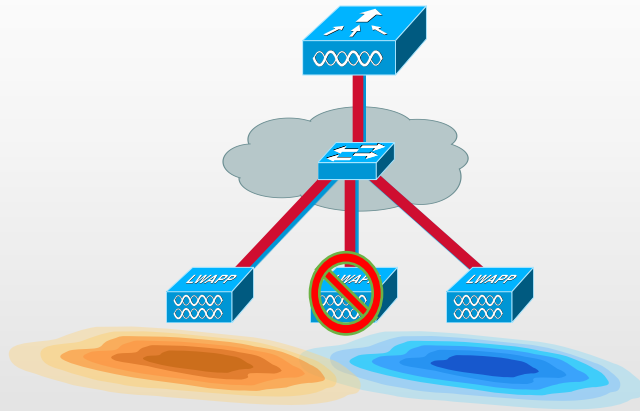
Miercom

## Cisco BandSelect - Improves Predictability and Performance

# Cisco's Radio Resource Management

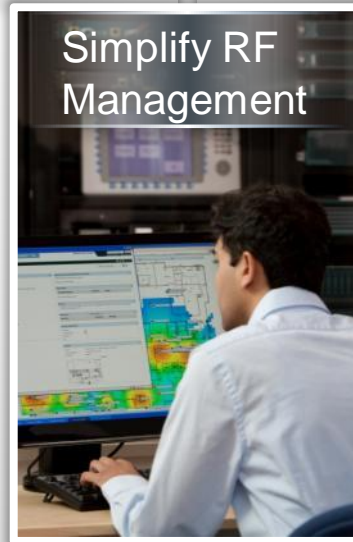
Simplify IT operations with automatic / dynamic RF management

BEFORE  
Manual RF management



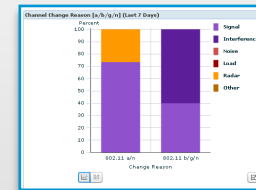
- ✗ Manual Channel Assignment
- ✗ Manual Transmit Power Adjustment
- ✗ Manual Coverage Hole Detection/Mitigation

AFTER  
Dynamic RF management



RRM  
Monitor > RRM  
RRM Statistics (Last 24 Hours)

Statistics	Value
Number of RF Groups	1
AP's at maximum power (a/n)	45.58 % (34 out of 73)
AP's at maximum power (b/g/h)	1.37 % (1 out of 73)
Total Configuration Mismatches	0



Channels

Power

Coverage

- ✓ Dynamic Channel Assignment
- ✓ Dynamic Transmit Power Adjustment
- ✓ Dynamic Coverage Hole Detection/Mitigation

## Cisco RRM - Improves Predictability and Performance

# Cisco VideoStream Technology

Wired-like video delivery over wireless

BEFORE

No resource reservation, degraded voice and video, cannot deliver multicast



CEO Meeting

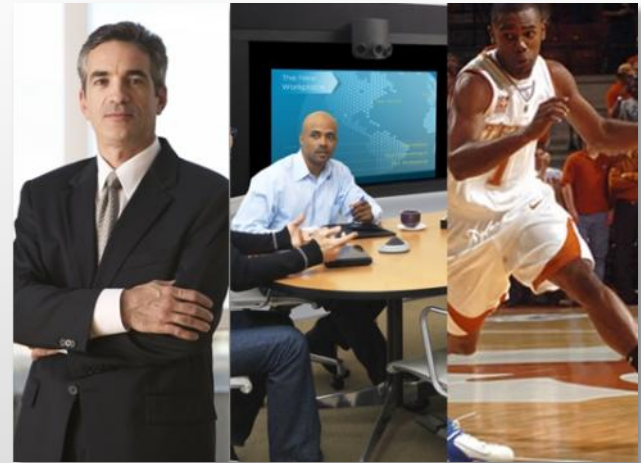
M&A Negotiation

Sports Event



AFTER

Stream prioritization, resource reservation, reliable multicast over wireless (Cisco MediaNet)



CEO Meeting

M&A Negotiation

Sports Event

## Cisco VideoStream – Improves Predictability and Performance

# Cisco AnyConnect Technology

Industry's first context-based and persistent VPN Connectivity

BEFORE

Unmanaged devices  
— risk of data loss and lack of access



AFTER

Always-on VPN connectivity



- ✓ Acceptable Use
- ✓ Access Control
- ✓ Data Loss Prevention

Cisco AnyConnect = Always On VPN Connectivity



# Why Cisco?

# Cisco Mobility – Best-of-Breed and Best-in-Class

## Best-of-Breed and Best-in-Class Mobility Predictability

### CleanAir

Chip level proactive and automatic interference mitigation

### ClientLink

Chip level proactive and automatic electronic beamforming

### Radio Resource Management

Simplified advanced RF management

### BandSelect

Proactive and automatic band steering for 5GHz capable clients

### VideoStream

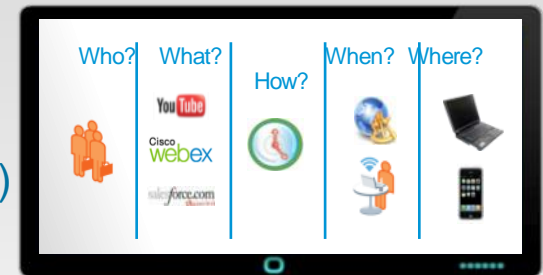
Chip level wired multicast over a Wireless network

### AnyConnect

Persistent context-aware VPN connectivity

## Best-of-Breed and Best-in-Class Policy and Network Management

### ISE (Control)

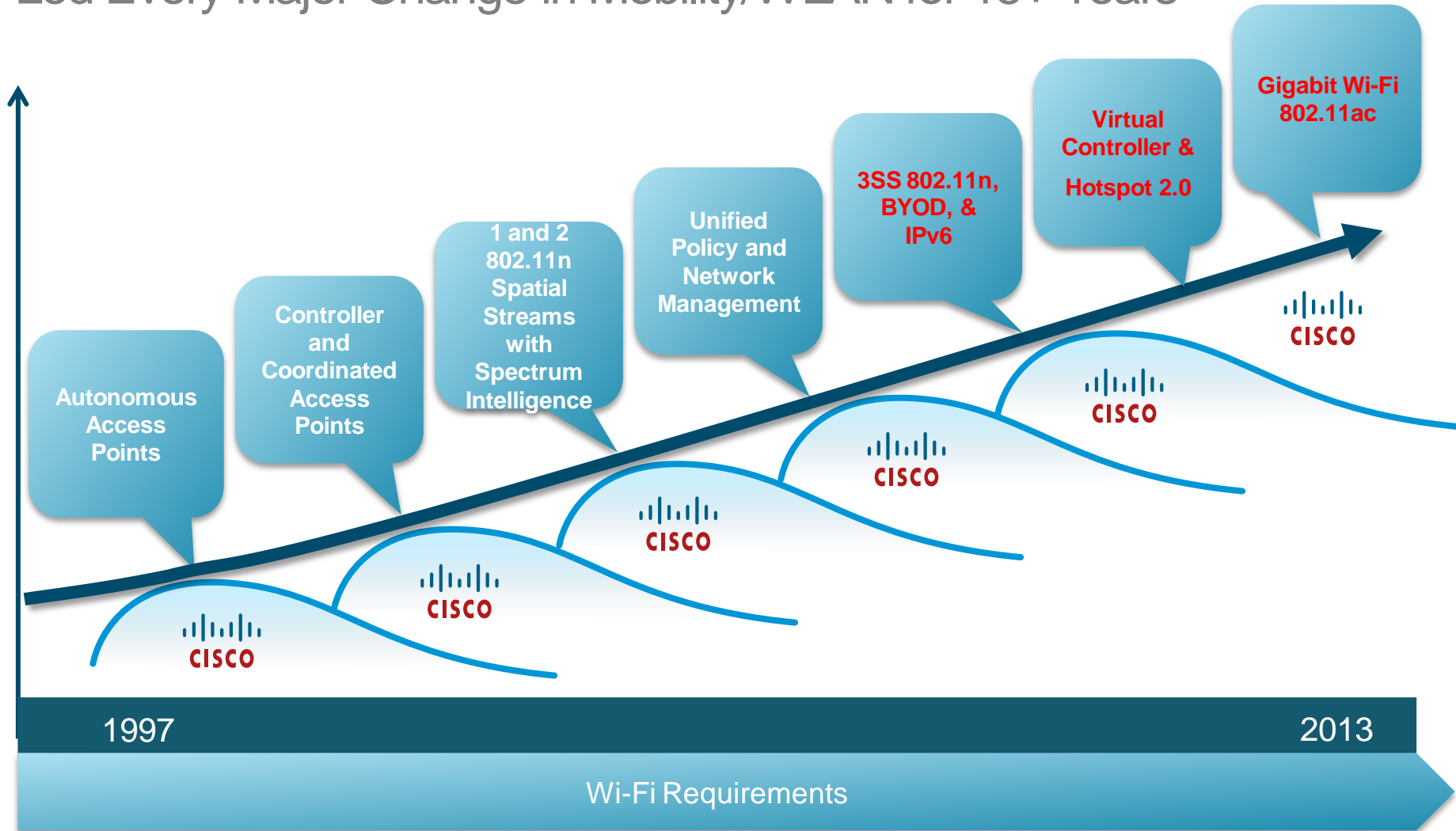


### NCS (Visibility)

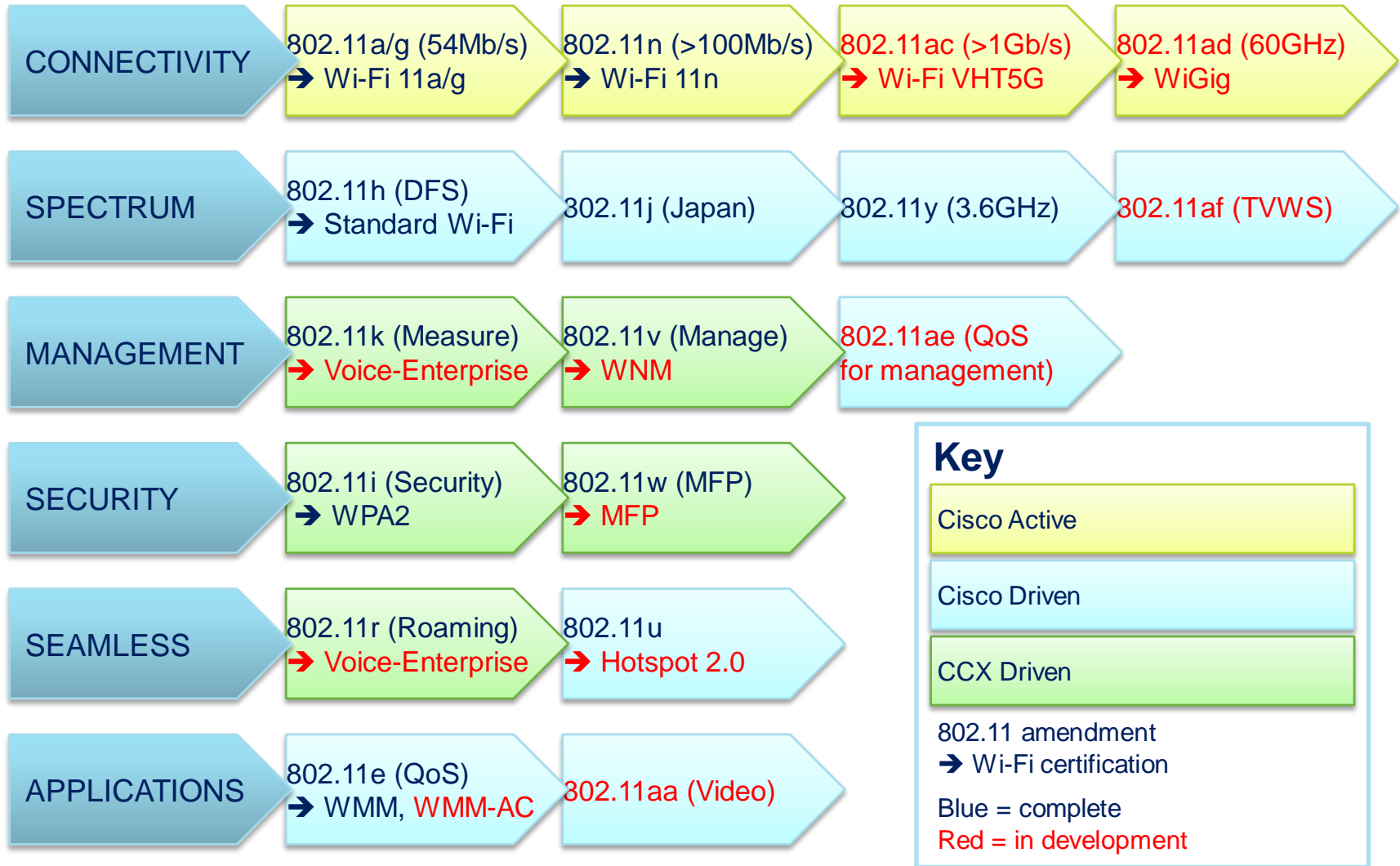


# Cisco Mobility Innovation Leadership

Led Every Major Change in Mobility/WLAN for 15+ Years



# Cisco IEEE and Wi-Fi Alliance Leadership



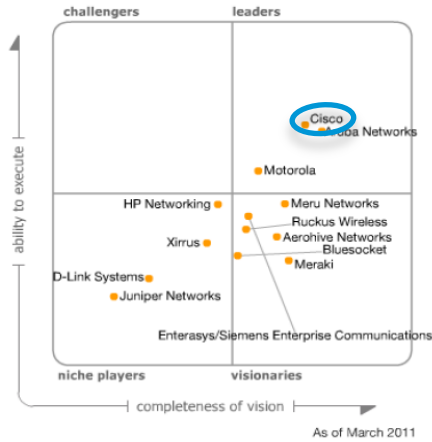
# Cisco Compatible Extensions (CCX) Leadership

- Over 90% of the Mobility / WLAN industry silicon is CCX compatible
- Over seventy-five (75) Partners license CCX in the CDN Program
- Over 350 Devices & Tags are CCX Certified (“Cisco Compatible”)
- Over 730 Companies in the CDN Program across Cisco CDO



# Cisco Gartner Leadership

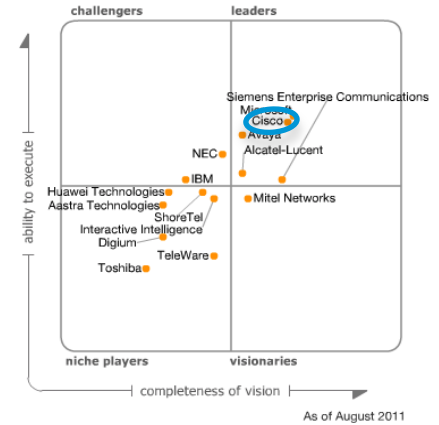
## WLAN



## LAN

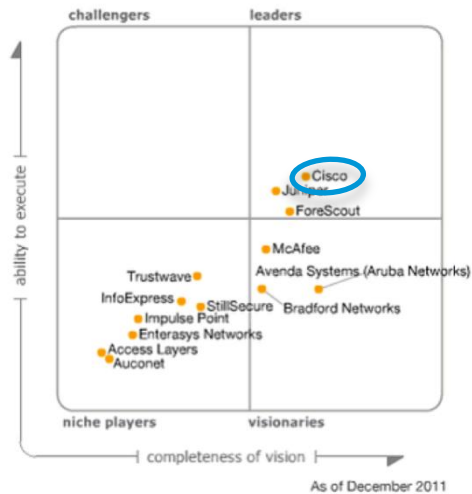


## Unified Communications

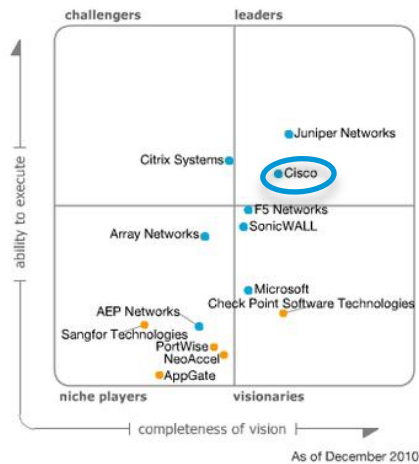


Source: Gartner (August 2011)

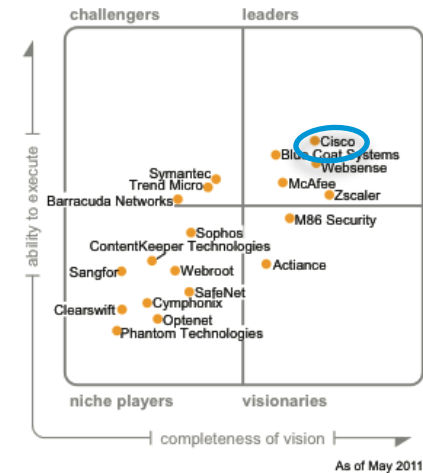
## BYOD / NAC



## VPN



## Web Security



# Cisco Mobility Market Leadership

## Mobility / WLAN market credentials

- 10+ years of market share leadership
- \$1.5+ Billion fast growth business
- 300,000+ enterprise customers
- Most Access Points shipped in the industry
- Most Controllers shipped in the industry
- 96% Fortune 1000 selected Cisco WLAN

## Mobility / WLAN industry credentials

- 10+ years of Gartner MQ leadership
- Largest patent portfolio in the industry
- Largest development team in the industry
- Largest IEEE involvement in the industry
- Co-founder of the Wi-Fi Alliance
- FIPS, Common Criteria, PCI certified



Thank you.

